

Amendments to the Claims:

Please cancel claims 12 and 29, amend claims 10 and 13, and add new claims 30-34 as shown in the following listing of claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

- 1 1. (previously presented) A system for measuring a three-dimensional object,
2 said system comprising:
3 a base;
4 elongate measuring members operatively connected to said base
5 such that said elongate measuring members can be displaced with respect to said
6 base in response to a surface of said three-dimensional object, said elongate
7 measuring members including displacement information embedded in said
8 elongate measuring members along the lengths of said elongate measuring
9 members; and
10 means for determining displaced distances of said elongate
11 measuring members due to said surface of said three-dimensional object, said
12 displaced distances of said elongate measuring members being measurements of
13 said surface of said three-dimensional object, said determining means being
14 configured to optically use said displacement information of said elongate
15 measuring members at displaced locations along the lengths of said elongate
16 measuring members to determine said displaced distances.
- 1 2. (original) The system of claim 1 wherein said elongate measuring
2 members are operatively connected to said base such that said elongate measuring
3 members can be displaced in a direction parallel to central axes of said elongate
4 measuring members, said central axes corresponding to the lengths of said
5 elongate measuring members.
- 1 3. (canceled).
- 1 4. (canceled).

1 5. (previously presented) The system of claim 1 wherein said determining
2 means includes optical sensors that are coupled to said base, said optical sensors
3 being configured to optically read said displacement information embedded in
4 said elongate measuring members at said displaced locations along the lengths of
5 said elongate measuring members.

1 6. (original) The system of claim 5 wherein said elongate measuring
2 members have reflectivity that varies along the lengths of said elongate measuring
3 members, said reflectivity of said elongate measuring members being said
4 displacement information embedded in said elongate measuring members.

1 7. (previously presented) The system of claim 5 wherein said displacement
2 information embedded in said elongate measuring members includes different
3 codes along the length of each of said elongate measuring members.

1 8. (previously presented) The system of claim 1 wherein said elongate
2 measuring members have transmissivity that varies along the lengths of said
3 elongate measuring members, and wherein said determining means includes light
4 sources and an imaging sensor, said light sources being positioned to project lights
5 into said elongate measuring members at said displaced locations along the
6 lengths of said elongate measuring members, said imaging sensor being
7 positioned to capture an image of light-emitting ends of said elongate measuring
8 members.

1 9. (original) The system of claim 8 further comprising a processing unit
2 configured to process said image to determine intensities of lights emitted from
3 said light-emitting ends of said elongate measuring members, said intensities of
4 lights corresponding to said displaced distances of said elongate measuring
5 members.

1 10. (currently amended) A system for measuring a three-dimensional object,
2 said system comprising:
3 a base;
4 elongate measuring members operatively connected to said base
5 such that said elongate measuring members can be displaced with respect to said
6 base in response to a surface of said three-dimensional object, said elongate
7 measuring members including displacement information embedded in said
8 elongate measuring members along the lengths of said elongate measuring
9 members; and
10 a displacement-determining mechanism operatively coupled to said
11 elongate measuring members, said displacement-determining mechanism being
12 configured to ~~track movements of said elongate measuring members to determine~~
13 displaced distances of said elongate measuring members due to said surface of
14 said three-dimensional object, said displaced distances of said elongate measuring
15 members being measurements of said surface of said three-dimensional object,
16 said displacement-determining mechanism being configured to optically use said
17 displacement information of said elongate measuring members at displaced
18 locations along the lengths of said elongate measuring members to determine said
19 displaced distances.

1 11. (original) The system of claim 10 wherein said elongate measuring
2 members are operatively connected to said base such that said elongate measuring
3 members can be displaced in a direction parallel to central axes of said elongate
4 measuring members, said central axes corresponding to the lengths of said
5 elongate measuring members.

1 12. (canceled).

1 13. (currently amended) The system of claim 10 wherein said displacement-
2 determining mechanism includes optical sensors that are coupled to said base, said
3 optical sensors being configured to optically read said displacement information
4 embedded in ~~track displacements of~~ said elongate measuring members at said
5 displaced locations along the lengths of said elongate measuring members.

1 14. (canceled).

1 15. (canceled).

1 16. (canceled).

1 17. (canceled).

1 18. (canceled).

1 19. (previously presented) A method for measuring a three-dimensional
2 object, said method comprising:

3 engaging a surface of said three-dimensional object with
4 displaceable measuring members, including displacing said displaceable
5 measuring members in response to said surface of said three-dimensional object,
6 said displaceable measuring members including displacement information
7 embedded in said displaceable measuring members along the lengths of said
8 elongate measuring members; and

9 determining displaced distances of said displaceable measuring
10 members by optically using said displacement information of said displaceable
11 measuring members at displaced locations along the lengths of said displaceable
12 measuring members, said displaced distances providing measurements of said
13 surface of said three-dimensional object.

1 20. (original) The method of claim 19 wherein said displacing of said
2 displaceable measuring members includes displacing said displaceable measuring
3 members in a direction parallel to central axes of said displaceable measuring
4 members, said central axes corresponding to the lengths of said displaceable
5 measuring members.

1 21. (canceled).

1 22. (canceled).

- 1 23. (previously presented) The method of claim 19 wherein said determining
2 of said displaced distances includes reading said displacement information
3 embedded in said displaceable measuring members at said displaced locations
4 along the lengths of said displaceable measuring members.
- 1 24. (previously presented) The method of claim 23 wherein said reading of
2 said displacement information includes measuring light reflected off said
3 displaced locations along the lengths of said displaceable measuring members,
4 said displaceable measuring members having reflectivity that varies along the
5 lengths of said displaceable measuring members.
- 1 25. (previously presented) The method of claim 23 wherein said reading of
2 said displacement information includes reading codes on said displaceable
3 measuring members at said displaced locations along the lengths of said
4 displaceable measuring members, each of said displaceable measuring members
5 having different codes along its length.
- 1 26. (previously presented) The method of claim 19 wherein said determining
2 of said displaced distances includes projecting lights into said displaceable
3 measuring members at said displaced locations along the lengths of said
4 displaceable measuring members and capturing an image of light-emitting ends of
5 said displaceable measuring members, said displaceable measuring members
6 having transmissivity that varies along the lengths of said displaceable measuring
7 members.
- 1 27. (original) The method of claim 26 further comprising processing said
2 image to determine intensities of lights emitted from said light-emitting ends of
3 said displaceable measuring members, said intensities of lights corresponding to
4 said displaced distances of said elongate measuring members.
- 1 28. (previously presented) The system of claim 7 wherein said different codes
2 along the length of each of said elongate measuring members include visual
3 binary patterns of high and low reflective regions.

1 29. (canceled).

1 30. (new) The system of claim 13 wherein said elongate measuring members
2 have reflectivity that varies along the lengths of said elongate measuring
3 members, said reflectivity of said elongate measuring members being said
4 displacement information embedded in said elongate measuring members.

1 31. (new) The system of claim 13 wherein said displacement information
2 embedded in said elongate measuring members includes different codes along the
3 length of each of said elongate measuring members.

1 32. (new) The system of claim 31 wherein said different codes along the
2 length of each of said elongate measuring members include visual binary patterns
3 of high and low reflective regions.

1 33. (new) The system of claim 10 wherein said elongate measuring members
2 have transmissivity that varies along the lengths of said elongate measuring
3 members, and wherein said displacement-determining mechanism includes light
4 sources and an imaging sensor, said light sources being positioned to project lights
5 into said elongate measuring members at said displaced locations along the
6 lengths of said elongate measuring members, said imaging sensor being
7 positioned to capture an image of light-emitting ends of said elongate measuring
8 members.

1 34. (new) The system of claim 33 further comprising a processing unit
2 configured to process said image to determine intensities of lights emitted from
3 said light-emitting ends of said elongate measuring members, said intensities of
4 lights corresponding to said displaced distances of said elongate measuring
5 members.